

CLAIMS

What is claimed is:

1. A bearing and shaft assembly for mounting in an opening through a support member for supporting an end of a rotatable member for rotation relative thereto under an axial preload condition, comprising:
  - a bolt having a threaded end portion threadedly receivable and engageable in a threaded hole in the end of the rotatable member, an opposite end portion positionable in the opening through the support member including an enlarged head having a shoulder therearound facing the threaded end portion, and a cylindrical shaft portion extending between the threaded and opposite end portions; and
  - a bearing having relatively rotatable inner and outer rings, the inner ring having oppositely facing axial ends extending around a central hole therethrough adapted for receiving the shaft portion of the bolt, and the outer ring including at least one mounting element for mounting the bearing on a side of the support member opposite the rotatable member in the opening through the support member;
  - wherein the bolt is insertable through the inner ring of the bearing and threadedly engageable with the threaded hole of the rotatable member for holding the inner ring of the bearing thereagainst for rotation therewith while exerting an axial tensile force on the bolt, and the outer ring is mountable in the opening through the support member, for supporting the end of the rotatable member for rotation on the support member.
2. The bearing and shaft assembly of claim 1, further comprising an annular spacer positionable around a portion of the shaft portion of the bolt between the inner ring of the bearing and the head of the bolt for adjusting a length of threaded engagement of the bolt with the rotatable member.

3. The bearing and shaft assembly of claim 1, wherein the rotatable member is at least partially contained in an interior of an enclosure adjacent to the support member, the opening through the support member extending from an exterior of the enclosure to the interior, and wherein the bolt is insertable through the opening through the support member from the exterior to the interior and threadedly engageable with the threaded hole of the rotatable member, and the at least one mounting element of the outer ring of the bearing is engageable with elements on the exterior of the support member, such that the bearing assembly is installable and removable from the exterior of the enclosure.
4. The bearing and shaft assembly of claim 3, wherein the enclosure comprises a feeder housing of an agricultural combine, and the rotatable member comprises a rock trap beater or conveyor sprocket shaft.
5. The bearing and shaft assembly of claim 4, wherein the support member comprises a side sheet of the feeder housing and the end of the rock trap beater or conveyor sprocket shaft is located closely adjacent to an interior surface of the side sheet.
6. A bearing assembly for supporting an end of a rotatable member for rotation in an interior space of an enclosure in closely spaced proximity to a support member located adjacent to the space, for supporting the bearing assembly and the end of the rotatable member, the bearing assembly comprising:
  - an elongate bolt including a cylindrical portion extending longitudinally from a larger head to a threaded end; and
  - a bearing including an inner ring and an outer ring supported around the inner ring for relative rotation therebetween, the inner ring including a

center hole therethrough adapted for receiving the cylindrical portion of the bolt, and the outer ring including at least one mounting element fixedly attachable to a portion of the support member external to the interior space for mounting the outer ring in or over an opening through the support member;

wherein the threaded end of the bolt is insertable from the exterior of the enclosure through the center hole of the inner ring of the bearing and receivable in a threaded hole in the end of the rotatable member in the interior space and tightenable in the threaded hole with the outer ring mounted in or over an opening through the support member, for holding the inner ring against the end of the rotatable member for rotation therewith and for applying a tensile preload force longitudinally through the bolt.

7. The bearing assembly of claim 6, further comprising an annular spacer positionable around the cylindrical portion of the bolt between the inner ring of the bearing and the head of the bolt for adjusting a longitudinal position of the bolt in the rotatable member.
8. The bearing assembly of claim 6, wherein bolt can be unthreaded from the threaded hole in the end of the rotatable member and the outer ring dismounted from the support member to allow externally removing the bearing assembly from the enclosure and the rotatable member.
9. The bearing assembly of claim 8, wherein the enclosure comprises a feeder housing of an agricultural combine, and the rotatable member comprises a rock trap beater or conveyor sprocket shaft.
10. The bearing assembly of claim 9, wherein the support member comprises a side sheet of the feeder housing and the end of the rock trap beater or

conveyor sprocket shaft is located closely adjacent to an interior surface of the side sheet.

11. An externally installable and removable preloaded bearing and shaft assembly for supporting an end of a rotatable member of a feeder assembly of an agricultural combine, for rotation in an interior space in close proximity to a side of an enclosure of the feeder assembly, the bearing and shaft assembly comprising:
  - an elongate bolt including a cylindrical shaft portion extending longitudinally from a larger head to a threaded end; and
  - a bearing including an inner ring and an outer ring supported around the inner ring for relative rotation therebetween, the inner ring including a center hole therethrough adapted for receiving the shaft portion of the bolt, and the outer ring including at least one mounting element fixedly attachable to the side of the enclosure external to the interior space for mounting the outer ring in or over an opening through the side of the enclosure;
  - wherein the threaded end of the bolt is insertable from the exterior of the enclosure through the center hole of the inner ring of the bearing and receivable in a threaded hole in the end of the rotatable member in the interior space and tightenable in the threaded hole with the outer ring mounted in or over an opening through the side of the enclosure, for holding the inner ring against the end of the rotatable member for rotation therewith and for applying a tensile preloading force longitudinally through the bolt.
12. The bearing and shaft assembly of claim 11, further comprising an annular spacer positionable around the shaft portion of the bolt between the inner ring of the bearing and the head of the bolt for adjusting a longitudinal relationship of the bolt and the rotatable member.

13. The bearing and shaft assembly of claim 11, wherein bolt can be unthreaded from the threaded hole in the end of the rotatable member and the outer ring dismounted from the side of the enclosure for externally removing the bearing assembly from the enclosure and the rotatable member.
14. The bearing and shaft assembly of claim 11, wherein the enclosure comprises a feeder housing of the feeder assembly, and the rotatable member comprises a rock trap beater or conveyor sprocket shaft.
15. The bearing and shaft assembly of claim 14, wherein the side of the enclosure comprises a side sheet of the feeder housing and the end of the rock trap beater or conveyor sprocket shaft is located closely adjacent to an interior surface of the side sheet.
16. The bearing and shaft assembly of claim 15, further comprising an annular spacer positionable around the shaft portion of the bolt between the inner ring of the bearing and the head of the bolt for adjusting a longitudinal position of the bolt head relative to the rock trap beater or conveyor sprocket shaft.